

CLAIMS

1. Pressure limiting valve to protect hydraulic pressure packs against overload, in particular to protect hydraulic props against falling rocks in underground mining and tunnel construction, comprising a valve housing (2) with consumer connection (3) and pressurized fluid outlet (4), which are separated from one other by means of a movable closure device (8) with a seal (6) securing the flow gap (10) between the pressurized fluid outlet (4) and the consumer connection (3), which closure device is movable against the force of a valve spring (5), and are connected to one another if an overload occurs in order to discharge the pressurized fluid,

characterized in that

the seal (6) is a seal ring with limited flexibility (12), which can be placed without prestress, and consequently displaceably in the direction of the closure device (8), into a groove (13) provided for this purpose, the groove (13) being configured so as to allow total or partial flow of pressurized fluid (11) behind the seal ring (12).

2. Pressure limiting valve according to claim 1,

characterized in that

the seal ring (12) has a rectangular, preferably square, cross-section.

3. Pressure limiting valve according to claim 1,

characterized in that

the groove (13) and the seal ring (12) are so positioned that the seal ring (12) can also be subjected to the system pressure fluid (11) when the valve (1) is in the closed position.

4. Pressure limiting valve according to any one of the preceding claims,
characterized in that
the groove (13) and seal ring (12) are arranged and configured such that they partially extend into the opening cross-section (14) of the connection bore (15) that connects with the flow gap (15), which bore is preferably configured as a radial bore (16).

5. Pressure limiting valve according to any one of the preceding claims,
characterized in that
the consumer connection (3) is configured and arranged with a blind hole (17) in the connection (26), and that radial bores (16) are provided at the end side of the blind hole (17) at the height of the flow gap (10).

6. Pressure limiting valve according to any one of the preceding claims,
characterized in that
the groove (13) in the inflow area of the system pressure fluid (11) has a beveled funnel-type partition (21) to the groove base (20), forming sort of a funnel opening.

7. Pressure limiting valve according to any one of the preceding claims,
characterized in that
a salient (25) is provided in the groove base (20).

8. Pressure limiting valve according to any one of the preceding claims,
characterized in that
the groove wall (22) opposite the beveled partition (21) is configured such that it provides radial fixation to, but allows axial movement of, the seal ring (12).

9. Pressure limiting valve according to any one of the preceding claims,
characterized in that
the partition (21) has spacers (23, 24) that influence the seal ring (12).

10. Pressure limiting valve according to claim 4,

characterized in that

the connection (26) comprising the consumer connection (3) has a piston-type attachment (27), on which a top hat shaped top part (28) and a spring disk (7) with a top hat brim (29) are arranged movably passing over the radial bores (15) in the attachment (27) against the force of the valve spring (5), the flow gap (10) between the bottom side (30) of the top hat brim (29) and the top side (31) of the connection nipple (26) being configured so as to extend up to the outlet ports (32, 33) representing the pressurized fluid outlets (4).

11. Pressure limiting valve according to any one of the preceding claims,

characterized in that

the corner (34) between the top side (31) of the connection nipple (26) and the attachment (27) is rounded.

12. Pressure limiting valve according to any one of the preceding claims,

characterized in that

the edge (25) toward the bottom side (30) of the top hat brim (29) is beveled.

13. Pressure limiting valve according to any one of the preceding claims,

characterized in that

the seal ring (12) is made of plastic material, preferably of polyamide.

14. Pressure limiting valve according to any one of the preceding claims,

characterized in that

the plastic seal ring (12) has sharp edges (38, 39) in the area of the contact sealing surface (37) at the piston-like attachment (27).